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MS 1784-2 (2006) (English): GOOD AGRICULTURAL PRACTICE (GAP) - PART 2: OIL PALM (ELAEIS GUINEENSIS JACQ.)

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MALAYSIAN STANDARD

MS 1784: PART 2:2006

GOOD AGRICULTURAL PRACTICE (GAP) - PART 2: OIL PALM (*ELAEIS GUINEENSIS* JACQ.)

ICS: 65.020.20

Descriptors: oil palm, sustainable crop production, best developed agricultural practices, food quality and safety, environmental protection, worker wekfare and safety

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Committee representation

The Food and Agricultural Industry Standards Committee (ISC A) under whose authority this Malaysian Standard was developed, comprises representatives from the following organisations:

Department of Agriculture
Department of Standards Malaysia
Federal Agricultural Marketing Authority
Federation of Malaysian Manufacturers
Malaysian Agricultural Research and Development Institute
Malaysian Association of Standards Users
Malaysian Palm Oil Association
Ministry of Agriculture and Agro-based Industry
Ministry of Health Malaysia
Ministry of International Trade and Industry
Universiti Kebangsaan Malaysia
Universiti Putra Malaysia

The Technical Committee on Good Agricultural Practice for Crop Commodities which supervised the development of this Malaysian Standard consists of representatives from the following organisations:

Cameron Highlands Floriculturists Association
Commercial Orchid Growers Association of Malaysia
Department of Agriculture Kuala Lumpur
Department of Agriculture Sabah
Department of Agriculture Sarawak
Federal Agricultural Marketing Authority
Golden Hope Plantations Berhad
Malaysian Agricultural Research and Development Institute
Malaysian Herbal Corporation
Malaysian Palm Oil Association
Malaysian Palm Oil Board
Malaysian Rubber Board
Ministry of Agriculture and Agro-based Industry
Ministry of Health Malaysia

Ministry of Plantation Industries and Commodities
National Association of Small Holders
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Q A Plus Asia Pacific Sdn Bhd

The Task Force on Oil Palm which developed this Malaysian Standard consists of representatives from the following organisations:

Advanced Agroecological Research Sdn Bhd
Department of Agriculture Kuala Lumpur
FELDA Agricultural Services Sdn Bhd
Golden Hope Plantations Berhad
Incorporated Society of Planters
Kumpulan Guthrie Bhd
Malaysian Palm Oil Association
Malaysian Palm Oil Board
National Association of Small Holders
Tradewinds R&D Centre
United Plantations Berhad

FOREWORD

This Malaysian Standard was developed by the Technical Committee on Good Agricultural Practice for Crop Commodities under the authority of the Food and Agricultural Industry Standards Committee. A Task Force on Oil Palm was established in drafting this standard.

This Malaysian Standard is intended to be used in certification schemes to recognise and certify farms which adopt Good Agricultural Practice (GAP) for oil palm in Malaysia.

The structure and presentation of this Malaysian Standard follows MS 1784:2005, *Crop commodities – Good Agricultural Practice (GAP)*. Where elements of MS 1784:2005 are not applicable to this Malaysian Standard, they are stated as such.

This Malaysian Standard consists of the following parts under the general title, Good Agricultural Practice (GAP)

- Part 2: Oil Palm (*Elaeis guineensis* Jacq.)
- Part 3: Rubber (*Hevea brasiliensis* Muell. Arg.)
- Part 4: Cocoa (*Theobroma cacao*)
- Part 5: Pepper (*Piper nigrum* L)

Compliance with a Malaysian Standard does not of itself confer immunity from legal obligations.

GOOD AGRICULTURAL PRACTICE (GAP) – Part 2: OIL PALM (*Elaeis guineensis* Jacq.)

1. Scope

This Malaysian Standard defines the essential elements for sustainable oil palm cultivation that is legally compliant, environmentally sound, socially acceptable and economically viable to ensure quality produce that is safe and suitable for utilisation and/or consumption.

2. Normative references

The following normative references are indispensable for the application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the normative references (including any amendments) applies.

MS 157, *Specification for Oil Palm Seed for Commercial Planting*

Oil Palm Nursery Competency Certification (OPNCC) of the Malaysian Palm Oil Board (MPOB)

Environmental Quality Act 1974 and Regulations

Pesticides Act 1974

Occupational Safety and Health Act 1994 and Regulations

Malaysian Palm Oil Board Act 1998

MS ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

Workers' Minimum Standards of Housing and Amenities Act 1990

3. Definitions

For the purposes of this standard, the following definitions apply.

3.1 Essential element

Critical, main or key factor.

3.2 Oil palm producers

Individuals and/or companies involved in oil palm commercial production. Oil palm producers in this standard refer to plantation owners and small holders.

3.3 Legally compliant

Adherence to all existing national and state legislation.

3.4 Socially acceptable

Meeting and addressing issues and concerns on the welfare and safety of persons working, living in and around the farm.

3.5 Economically viable production

Production that gives positive returns on a sustainable basis.

3.6 Sustainable crop production

A holistic, systems-oriented approach to farming that is efficient in resource management and focuses on the interrelationship of social, economic and environmental processes. This approach is based upon environmentally sound, socially responsible and economically profitable practices.

3.7 Environmentally sound

Farm practices that do not have adverse effects on the environment, e.g. chemical pollution of water ways and effluent discharge.

3.8 Quality produce

Produce that is wholesome and safe for consumption and/or suitable for utilisation.

3.9 Pests

Organisms that are capable of causing injury and loss to oil palm. These organisms include insects, other invertebrates, fungi, bacteria, viruses, weeds and vertebrates.

3.10 Integrated Pest Management (IPM)

A management system that uses all suitable techniques and methods in a manner as compatible as possible to maintain pest population at levels below those causing economic injury.

3.11 Competent agriculturist

Individuals with formal training in agriculture and/or organisations with relevant expertise in oil palm cultivation.

4. Requirements

4.1 Traceability

The produce shall be traceable to the farm where it has been originally produced.

4.2 Record keeping and internal audit

4.2.1 Record keeping

Farms shall keep up-to-date records. All records shall be maintained and retained for at least 12 months unless stipulated by any specific legislation. Record keeping system shall be established in which all the essential elements are captured. The records shall be accessible and audited. All records shall be treated as confidential.

4.2.2 Internal audit

Internal audit shall be carried out at least once a year based on the requirements of this standard. It shall be completed and documented. Corrective actions need to be implemented and documented.

4.3 Planting materials

4.3.1 Choice of seedling or clonal planting materials should meet requirements as agreed between oil palm producers and customers such as MS 157 or other equivalent standards.

4.3.2 Genetically modified planting materials shall not be used unless express permission has been given by the relevant authorities and should comply with existing regulations in the country of the final consumers.

4.3.3 The planting of genetically modified organisms (GMOs) shall be agreed between Oil palm producers and customers before planting.

4.3.4 All seedling planting materials shall be sourced from suppliers certified to MS 157 or nurseries with Oil Palm Nursery Competency Certification (OPNCC) by the Malaysian Palm Oil Board (MPOB). Records of planting materials, variety name, variety purity, batch number and seed vendor shall be kept.

4.3.5 All clonal materials should be sourced from reputable vendors with known historical yield performance of the parent materials.

4.3.6 Where protected varieties are used, the farm shall respect intellectual property rights legislation on plant variety protection.

4.3.7 Varieties used for planting in the farm should preferably possess resistance or tolerance to major pests and diseases so as tominimise utilisation of pesticides.

4.3.8 If seed treatments are carried out, the use of these treatments should be justified and shall be recorded.

4.4 Site history and site management

4.4.1 Site history

4.4.1.1 A recording system shall be established for the site history and layout of fields of their crop history.

4.4.1.2 For all new oil palm plantings, a risk assessment shall be carried out by a competent agriculturist, taking the following into account:

a) prior use of the land;

b) potential impacts of the production on adjacent crops and areas; and

c) potential impact of activities carried out at adjacent areas.

The information of the risk assessment shall be recorded.

4.4.1.3 All new oil palm plantings should not be cultivated on land more than 300 m above sea level.

4.4.1.4 All new oil palm plantings should not be cultivated on land of more than 25 ° slope unless as specified by local legislation.

4.4.2 Site management

4.4.2.1 The farm management shall demonstrate that they have legal rights and all necessary regulatory approvals for oil palm cultivation on the land.

4.4.2.2 Where oil palm is grown on sloping land within the permissible level, appropriate soil conservation measures shall be undertaken to prevent soil erosion and siltation of drains, waterways and contamination of surface and groundwater through run-off of soil, nutrients or chemicals.

4.4.2.3 A visual identification or reference system for each field shall be established.

4.5 Soil and substrate management

4.5.1 Soil type mapping

4.5.1.1 Soil map should be prepared for the farm to facilitate infrastructure planning, land preparation, inter-cropping, livestock integration and replanting programmes.

4.5.1.2 Topography map should be used to assist land clearing, preparation and planting.

4.5.2 Cultivation

Cultivation practices proven to improve or maintain soil structure and to minimise soil compaction should be followed.

4.5.3 Soil erosion

Field cultivation techniques that minimise soil erosion shall be adopted.

4.5.3.1 Mechanisation

The types and sizes of machines to be used should be considered in relation to soil type to minimise soil compaction and rutting.

4.5.3.2 Soil and moisture conservation

Cultivation techniques that minimise soil erosion such as establishment of legume cover crops, conservation pits and application of empty fruit bunches (EFB) should be adopted.

4.5.4 Soil fumigation

Not Applicable.

4.5.5 Substrates

Preference should be given to the use of natural substrates such as soil.

4.6 Fertiliser management (organic and inorganic)

4.6.1 Nutrient requirement

4.6.1.1 Management practices should take into consideration the soil types to ensure nutrient balances and minimise nutrient loss.

4.6.1.2 Fertiliser rates should be based on crop requirement and nutrient levels of soil and leaf.

4.6.2 Fertiliser utilisation

4.6.2.1 Usage of fertilisers should be in accordance with science-based recommendations or best developed practices.

4.6.2.2 The type, quantity, method, placement, timing and frequency of fertiliser application should be carefully observed so as to maximise benefits and minimise losses.

4.6.3 Records of application

All applications of soil and foliar fertilisers shall be recorded. Records shall include location, date of application, type and quantity of fertiliser applied, the method of application and name of operator.

4.6.4 Application machinery

Fertiliser application machinery shall be kept in good working condition and calibrated to ensure the correct quantity is applied.

4.6.5 Fertiliser source and storage

4.6.5.1 Fertiliser stock records shall be kept up-to-date and made available for inspection.

4.6.5.2 Fertilisers should not be stored in the same room with pesticides. If this is not possible, the fertilisers and the pesticides shall be physically separated and labelled accordingly.

4.6.5.3 Fertilisers shall be stored in a covered, clean, dry location where there is no risk of contamination of water sources.

4.6.5.4 Fertilisers shall not be stored with nursery stock.

4.6.5.5 Fertilisers shall not be stored with fresh produce.

4.6.5.6 All hazard and risk areas to humans shall be clearly indicated.

4.6.5.7 Records of source and chemical content of fertilisers used shall be made available.

4.6.6 Organic fertiliser

4.6.6.1 Organic fertiliser should be stored and handled in an appropriate manner to reduce the risk of contamination of the environment.

4.6.6.2 The use of untreated and treated human sewage and pig waste is prohibited.

4.6.6.3 To avoid pollution by heavy metals or by nitrate leaching, analysis of nutrients, heavy metals and other potential pollutants in organic fertilisers should be completed before application. Proper account shall also be taken of the nutrient contribution of all organic fertilisers.

4.6.6.4 Organic fertilising in open field cultivation should be based on nutrient management plans.

4.6.6.5 Source of organic fertiliser used shall be recorded. These include oil palm biomass such as palm oil mill effluent (POME), empty fruit bunches (EFB), shell and fibre, pruned fronds, palm trunks, etc.

4.7 Irrigation and fertigation

4.7.1 Planning

Oil palm producers are recommended to base their irrigation or fertigation requirement on sound historical records and scientific data.

4.7.2 Method

4.7.2.1 The most efficient and commercially practical water delivery system should be used to ensure the best utilisation of nutrient and water resources as well as to protect water sources and avoidance of pollution.

4.7.2.2 Consideration should be given to a water management plan to optimise water and nutrient usage and reduce wastage (e.g. systems for reuse, application at night, maintenance of equipment to reduce leakage, collection of rainwater, etc.).

4.7.2.3 All oil palm producers are encouraged to maintain records of irrigation and fertigation water usage.

4.7.3 Quality of water

4.7.3.1 Untreated sewage water is prohibited for use.

4.7.3.2 Based on risk assessment, water sources should be analysed at least once a year for microbial, chemical and mineral pollutants. The analysis results should adhere to the Environmental Quality Act 1974 and Environmental Quality Regulations 1979 and adverse results acted upon.

4.7.4 Supply of water

4.7.4.1 Water should be derived from sustainable sources. Oil palm producers are encouraged to seek advice from relevant local authorities, e.g. local Drainage and Irrigation Department (DID) on water sourcing.

4.7.4.2 For new planting which are subjected to tidal flooding, a survey should be carried out before planting by a competent agriculturist in consultation with the relevant local authorities to establish requirements for construction of bunds, main canals and tidal gates .

4.7.5 Water harvesting practices

Water harvesting practices should be encouraged (e.g. water from road-side drains should be directed to conservation terraces, use of EFB to hold irrigation water, use of spread pruned fronds, silt pits, etc.)

4.8 Crop protection

4.8.1 Basic elements of crop protection

4.8.1.1 The use of pesticides to protect the crop shall beminimised.

4.8.1.2 Wherever possible, Oil palm producers shall apply recognised Integrated Pest Management (IPM) techniques. Non-chemical control measures are preferred over chemical treatments.

4.8.1.3 Oil palm producers are encouraged to seek advice on IPM from competent agriculturists.

4.8.2 Choice of chemicals

4.8.2.1 The crop protection product utilised shall be appropriate for the control required.

4.8.2.2 Oil palm producers shall only use chemicals that are officially registered under the Pesticides Act 1974.

4.8.2.3 Selective products specific to the target pest which have minimal effect on populations of beneficial organisms, aquatic life, workers and consumers and are not detrimental to the ozone layer should be used.

4.8.2.4 Instructions on the label shall be followed to ensure effective application and to avoid risks to operators, consumers and the environment.

4.8.2.5 An anti-resistance strategy (e.g. use of correct dosage and alternative chemicals) should be adopted to avoid reliance on any one chemical.

4.8.2.6 Oil palm producers shall not use chemicals that are banned or disallowed in importing countries.

4.8.2.7 Oil palm producers should consult their customers to determine if any additional commercial restrictions exist.

4.8.3 Advice on pesticide usage

Oil palm producers are encouraged to seek advice on pesticide usage from competent agriculturists.

4.8.4 Records of application

All records of pesticide applications shall include crop name, any intercrop and animal integration, location, date and reason for application, trade name of pesticide used, dosage, method of application and name of operator.

4.8.5 Safety, training and instructions

4.8.5.1 Operators shall be trained on safe and proper use of pesticides.

4.8.5.2 Each area of application should be field marked with appropriate warning sign.

4.8.6 Personal clothing and equipment

4.8.6.1 Operators shall be equipped with suitable personal protective clothing and equipment appropriates to the danger posed to health and safety in accordance to the Occupational Safety and Health Act 1994 and Regulations.

4.8.6.2 Personal protective clothing and equipment shall be cleaned after use and stored separately from pesticides.

4.8.7 Pre-harvest interval

Pre-harvest intervals as prescribed on pesticides label should be adhered to.

4.8.8 Spray equipment

4.8.8.1 Spray equipment shall be suitable for use in oil palm and shall be kept in good working condition. Calibration should be carried out as and when necessary to ensure accurate delivery of the required quantity of spray.

4.8.8.2 When preparing spray mix, the correct quantity, dosage of chemical and the proposed treatment type shall be calculated, accurately prepared and recorded.

4.8.9 Disposal of surplus spray mix

Surplus spray mix and tank washings should be sprayed over an untreated area of the crop as long as the recommended dosage has not been exceeded or on designated fallow land. Records should be kept of such spraying.

4.8.10 Pesticide storage

4.8.10.1 Pesticides shall be stored in accordance with local regulations.

4.8.10.2 Pesticides shall be stored in a sound, secured, water resistant, well ventilated and well-lit location away from other materials.

4.8.10.3 All shelves should be of non-absorbent material.

4.8.10.4 The pesticide store shall be able to retain spillage (e.g. to prevent contamination of water courses).

4.8.10.5 There shall be adequate facilities for measuring and mixing pesticides.

4.8.10.6 There shall be emergency facilities (e.g. plenty of clean water, sand, sawdust) to deal with contamination and accidental spillage.

4.8.10.7 Keys and access to the store shall be limited to personnel with adequate training in the handling of pesticides.

4.8.10.8 A procedure to handle accidents, a list of contact telephone numbers and the location of the nearest telephone shall be available within the immediate vicinity of the store. Similar information shall also be available next to the designated telephone.

4.8.10.9 An inventory of the pesticide store shall be kept and be readily available for inspection.

4.8.10.10 All pesticides shall be stored in their original packaging.

4.8.10.11 Only pesticides registered for use on oil palm or other crops on the farm shall be stored.

4.8.10.12 Powders shall be stored on shelves above liquids or separately.

4.8.10.13 Warning signage of potential dangers shall be placed on access doors.

4.8.11 Empty pesticide containers

4.8.11.1 Empty pesticide containers shall not be reused and their disposal shall be in a manner that avoids exposure to humans and contamination of the environment.

4.8.11.2 Official collection and disposal systems should be used if available.

4.8.11.3 Empty containers shall be rinsed at least three times with water, and the washings returned to the spray tank before disposal.

4.8.11.4 Unless participating in established recycling programmes or with expressed permission from the authorities, rinsed containers shall be pierced to prevent reuse.

4.8.11.5 Empty containers shall be secured until disposal.

4.8.11.6 Disposal or destruction of containers shall be in accordance with the Pesticides Act 1974 and/or any other relevant local regulations.

4.8.12 Obsolete pesticides

Obsolete pesticides shall only be disposed through an approved chemical waste contractor.

4.9 Harvesting

4.9.1 Hygiene

4.9.1.1 Hygiene protocol should be put in place in order to prevent physical, microbiological and chemical contamination for workers.

4.9.1.2 Workers shall undergo training in basic hygiene and safety. They shall be made aware of the requirement to notify management should they contract any transferable diseases.

4.9.1.3 Workers shall have access to clean toilet and washing facilities.

4.9.2 Packaging on farm

Not applicable.

4.9.3 Fresh fruit bunches (FFB) harvesting and collection

4.9.3.1 FFB shall be harvested according to acceptable industry ripeness standards.

4.9.3.2 There shall be zero tolerance to unripe bunches.

4.9.3.3 Bunch stalks should be less than 5 cm long.

4.9.3.4 Cut fronds should be stacked in designated piles.

4.9.3.5 All loose fruits should be collected without contamination by ground debris and stones.

4.9.3.6 All FFB along with loose fruits should be delivered to the mill within 24 hours after harvesting.

4.9.3.7 Harvesting rounds should be maintained at 10 – 14 day intervals.

4.10 Post-harvest handling

4.10.1 Post-harvest treatment

Not applicable.

4.10.2 Post-harvest washing

Not applicable.

4.10.3 Logistics

All FFB and loose fruits should be conveyed from the field to the mill with minimal damage, delay and contamination.

4.10.3.1 Infield collection

All FFB and loose fruits collected from the palm base should be delivered to the collection points with minimal damage, delay and contamination.

4.10.3.2 Main line transport to the mill

Vehicles transporting FFB shall be registered and licensed and secured and should not carry other hazardous cargo e.g. chemicals.

4.10.3.3 Intermediate collection centres

FFB should not be shovelled into vehicles from intermediate ramp floor to minimise bruising.

4.11 Pesticide residue analysis of oil palm

Not applicable.

NOTE. Not applicable because the current GAP involves production of FFB up to the mill. The pesticide residue analysis should be deduced by analysis of palm oil samples appropriate to the harvested batch of crop.

4.12 Waste and pollution management, recycling and reuse

4.12.1 All possible waste products and sources of pollution should be identified in all areas of oil palm production.

4.12.2 Having identified wastes and pollutants, an operational plan should be developed and implemented, to avoid or reduce wastage and pollution. Pruned fronds, biomass at felling, (EFB) and (POME) should be recycled appropriately in the field in compliance with the Environmental Quality Act 1974 and Regulations.

4.13 Worker health, safety and welfare

4.13.1 Action plan

There should be an action plan to promote safe and good working conditions.

4.13.2 Training

4.13.2.1 Training shall be given to workers operating dangerous or sophisticated equipment.

4.13.2.2 Records of training for each employee shall be kept.

4.13.2.3 Accident and emergency procedures with clear instructions in the appropriate language of the workforce shall be displayed to all workers.

4.13.3 Facilities and equipment

4.13.3.1 First aid boxes shall be available at designated sites and all workers should be informed of these locations and the personnel in charge.

4.13.3.2 Hazards should be clearly identified by appropriate warning signage.

4.13.4 Pesticide handling

Workers undertaking pesticide applications on the farm should receive health checks in line with the Occupational Safety and Health Act 1994 and Regulations and Pesticides Act 1974.

4.13.5 Hygiene

4.13.5.1 All permanent product packing and storage sites shall have adequate pest control measures, particularly in areas for food handling, storage of packaging, storage of pesticides and storage of fertilisers.

4.13.5.2 Workers should receive basic training in cleanliness requirements. The training program should outline the need for general safety.

4.13.5.3 The premises should be kept clean at all times to avoid establishing a breeding ground for pests.

4.13.6 Welfare

4.13.6.1 All employment conditions shall comply with relevant regulations.

4.13.6.2 If on-site living quarters are provided, they shall be habitable and have basic amenities and facilities in compliance with Workers' Minimum Standards Housing and Amenities Act 1990.

4.14 Environmental issues

4.14.1 Impact of farming on the environment

Oil palm producers shall conform to the Environmental Quality Act 1974 and Regulations which covers the concerns of air, water, soil, and other environmental issues such as the practice of zero burn replanting, protection of watercourses through maintenance of riparian buffer zones and avoidance of adverse impacts on downstream users.

4.14.2 Wildlife and biodiversity conservation

4.14.2.1 Oil palm producers should always be conscious of the need to conserve biodiversity, wildlife, high conservation value areas and the enhancement of agricultural biodiversity.

4.14.2.2 Where Environmental Impact Assessment (EIA) is required, consideration for the conservation of biodiversity and wildlife shall include the following areas:

a) a baseline audit to understand existing animal and plant diversity on the farm;

b) action to avoid damage and deterioration of habitats on the farm; and

c) an action plan to enhance habitats and increase biodiversity, in particular agricultural biodiversity on the farm.

4.14.3 Unproductive sites

Oil palm producers are encouraged to convert unproductive sites (e.g. swamps, steep slopes, deep peat etc.) into conservation areas for natural flora and fauna.

4.15 Record of complaints

Records of complaints on oil palm produce not in compliance with requirements in this standard and their remedial actions shall be made available on site.

5. Legal requirements

All farm activities and produce shall in all other aspects comply with the requirements of the legislations currently in force in Malaysia.

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MS 1514, *General principles of food hygiene*

MS 1529, *The production, processing, labelling and marketing of plant-based organically produced foods*

MS 1784, *Crop commodities – Good agricultural practice (GAP)*

National Land Code

National Physical Plan 2005

Acknowledgements

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Dr A Xaviar	United Plantations Berhad